This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Withdrawn) A ballast for a gas discharge lamp comprising:

a processor for controlling a level of a ballast output signal in response to a plurality of ballast control signals;

an inverter for receiving a processor output signal from said processor and providing said ballast output signal in response to said processor output signal; and

a plurality of input terminals for receiving said plurality of ballast control signals, wherein:

said plurality of ballast control signals is coupled to said processor via said input terminals; and

at least one of said plurality of input terminals is a bidirectional terminal capable of

receiving and sending control signals.

2. (Withdrawn) A ballast in accordance with claim 1, wherein said ballast output signal controls a light level of a gas discharge lamp.

3. (Withdrawn) A ballast in accordance with claim 1, wherein said at least one bidirectional terminal is coupleable to a control signal for controlling at least one other ballast.

4. (Withdrawn) A ballast in accordance with claim 1, wherein said plurality of ballast control signals comprises at least one of a digital control signal, an infra-red signal, a serial

communications signal, an analog signal, a two-state signal, a signal indicative of a temperature of said ballast, a ballast circuit sense signal, and a phase control signal.

5. (Withdrawn) A ballast in accordance with claim 1, wherein said processor output signal is a switching signal for controlling at least one switch in said inverter.

6. (Withdrawn) A ballast in accordance with claim 1, wherein said processor controls said ballast output signal in response to said plurality of ballast control signals in accordance with a selected one of a plurality of predetermined control processes.

7. (Withdrawn) A ballast in accordance with claim 6, wherein said selected control process is selected via at least one of said plurality of ballast control signals.

8. (Withdrawn) A ballast in accordance with claim 6, wherein:

parameters of said ballast output signal are determined in accordance with a sequence and priority of values of said ballast control signals; and

each control process comprises a unique priority and sequence algorithm.

9. (Withdrawn) A ballast in accordance with claim 6, further comprising a memory portion for storing said plurality of predetermined control processes.

10. (Withdrawn) A distributed ballast system comprising:

a distributed plurality of ballasts coupled together via a bidirectional interface, each ballast comprising:

a processor for controlling a level of a ballast output signal in response to a plurality of ballast control signals;

an inverter for receiving a processor output signal from said processor and providing said ballast output signal in response to said processor output signal; and

a plurality of input terminals for receiving said plurality of ballast control signals, wherein:

said plurality of ballast control signals is coupled to said processor via said input terminals; and

said ballasts of said plurality of ballasts are inter-coupled via a bidirectional interface.

11. (Withdrawn) A system in accordance with claim 10, wherein:

said bidirectional interface is capable of sending and receiving ballast control signals.

12. (Withdrawn) A system in accordance with claim 10, wherein said bidirectional interface is capable of sending and receiving ballast control signals for controlling at least one other ballast within said distributed plurality of ballasts.

13. (Withdrawn) A system in accordance with claim 10, wherein at least one ballast output signal provided by said plurality of ballasts controls a light level of at least one gas discharge lamp.

14. (Withdrawn) A system in accordance with claim 10, wherein said plurality of ballast control signals comprise at least one of a digital control signal, an infra-red signal, a serial

communications signal, an analog signal, a signal indicative of a temperature of said ballast, a ballast circuit sense signal, and a phase control signal.

15. (Withdrawn) A system in accordance with claim 10, wherein for each ballast, said processor output signal is a switching signal for controlling at least one switch in said inverter.

16. (Withdrawn) A system in accordance with claim 10, wherein for each ballast said processor controls said ballast output signal in response to said plurality of ballast control signals in accordance with a selected one of a plurality of predetermined control processes.

17. (Withdrawn) A system in accordance with claim 16, wherein for each ballast said selected control process is selected via at least one of said plurality of ballast control signals.

18. (Withdrawn) A system in accordance with claim 16, wherein:

parameters of each ballast output signal are determined in accordance with a sequence and priority of values of ballast control signals; and

each control process comprises a unique priority and sequence algorithm.

19. (Withdrawn) A system in accordance with claim 16, each ballast further comprising a memory portion for storing said plurality of predetermined control processes.

20. (Withdrawn) A method for controlling a gas discharge lamp with a ballast having a processor therein, said method comprising:

receiving a plurality of control signals by said processor;

determining a ballast output signal for controlling said gas discharge lamp in accordance with a predetermined set point procedure stored in memory of said processor; and

controlling a switch of an inverter of said ballast for determining said ballast output signal.

21. (Withdrawn) A method in accordance with claim 20, wherein said step of controlling said switch comprises predicting when to open and when to close said switch.

22. (Withdrawn) A method in accordance with claim 20, further comprising selecting said predetermined set point procedure from a plurality of set point procedures in response to said plurality of control signals.

23. (Withdrawn) A method in accordance with claim 20, wherein said step of controlling said gas discharge lamp in accordance with a predetermined set point procedure comprises controlling said discharge lamp in accordance with an assigned priority and relative sequence of said received plurality of control signals.

24. (Withdrawn) A method in accordance with claim 20, further comprising the step of providing at least one control signal for controlling at least one other ballast.

25. (Currently Amended) An electronic ballast for driving a gas discharge lamp, comprising:

an inverter for producing a high frequency drive voltage for driving a lamp current in said gas discharge lamp, said drive voltage having an operating frequency and an operating duty cycle;

a microprocessor electrically connected to said inverter for directly controlling said

inverter to control said lamp current, said microprocessor operable to provide an output signal to said inverter, such that said operating frequency and said operating duty cycle of said drive voltage are substantially the same as a frequency and a duty cycle of said output signal; and

a port in electrical ~~communications~~ communication with said microprocessor for sending a first message ~~messages~~ from said microprocessor comprising at least one ~~of a~~ command and for sending a second message from said microprocessor comprising at least one [[a]] ballast configuration onto a communication link operable to connect said electronic ballast to at least one other electronic ballast connected to said communication link, wherein:

said microprocessor is operable to send the first message to said at least one other electronic ballast to control the operation of said at least one other electronic ballast, and to send the second message to said at least one other electronic ballast to inform said at least one other electronic ballast of its configuration to enable said at least one other electronic ballast to use said ballast configuration message to adjust its operation.

26. (Withdrawn) An electronic ballast for driving a gas discharge lamp, comprising:

an inverter for producing a high frequency drive voltage for driving a lamp current in said gas discharge lamp;

a microprocessor electrically connected to said inverter for directly controlling said inverter to control the said lamp current; and

a port in electrical communications with said microprocessor for sending messages to at least one of a central controller, a local controller, and a lighting load.

27. (Withdrawn) The electronic ballast of claim 26, further comprising a port in electrical communication with said microprocessor for at least one of receiving messages, and both receiving and sending messages.

28. (Withdrawn) The electronic ballast of claim 26, wherein said microprocessor contains a program for determining a status of said electronic ballast and sending a message indicative of said status via said port.

29. (Withdrawn) The electronic ballast of claim 27, wherein said microprocessor contains a program for responding to a message received via said port by sending a message via said port.

30. (Withdrawn) The electronic ballast of claim 29, wherein said received message comprises a request for information chosen from the group consisting of on/off condition, running hours, running hours since last lamp change, dim level, operating temperature, and failure conditions.

31. (Withdrawn) The electronic ballast of claim 26, wherein said microprocessor contains a program for determining a status of said electronic ballast and modulating the lamp current to indicate a predetermined status condition has been reached.

32. (Withdrawn) The electronic ballast of claim 26, further comprising a transducer in electrical communication with said microprocessor for providing a signal perceptible to a person.

33. (Withdrawn) The electronic ballast of claim 32, wherein said signal is an audible signal.

34. (Withdrawn) An electronic ballast for driving a gas discharge lamp, comprising:

an inverter for producing a high frequency drive voltage for driving a lamp current in said gas discharge lamp;

a microprocessor electrically connected to said inverter; said microprocessor for directly controlling said inverter to control said lamp current to a desired level;

a port electrically connected to said microprocessor; said port for receiving messages;

a memory electrically connected to said microprocessor; and

a set of data stored in said memory for facilitating operation of said ballast, wherein a portion of said set of data is changed by said microprocessor in response to a predetermined message received via said port.

35. (Withdrawn) The electronic ballast of claim 34, wherein said portion of said set of data includes information relating to at least one of the ballast's location and the ballast's duties in a system.

36. (Withdrawn) The electronic ballast of claim 34, wherein said microprocessor contains a program for determining said desired level; said program using said set of data to determine how a message received via said at least one port should be used to determine said desired level.

37. (Currently Amended) An electronic ballast for driving at least one gas discharge lamp, comprising:

an inverter circuit producing a high frequency drive voltage for driving a lamp current in said at least one gas discharge lamp, said drive voltage having an operating frequency and an operating duty cycle;

a microprocessor connected to said inverter, said microprocessor directly controlling said inverter to control said lamp current to a desired level, said microprocessor operable to provide an output signal to said inverter, such that said operating frequency and said operating duty cycle of said drive voltage are substantially the same as a frequency and a duty cycle of said output signal; and

at least two ports connected to said microprocessor, each of said ports being capable of at least one of sending and receiving messages comprising at least one of a command and a ballast configuration.

at least two ports connected to said microprocessor, wherein:

a first one of said at least two ports is adapted to be coupled to a digital communication link, said digital communication link operable to connect said electronic ballast to at least one other electronic ballast, said first port transmitting on to said digital communication link a ballast configuration message to inform said at least one other electronic ballast of the ballast configuration of said electronic ballast to enable said at least one other electronic ballast to adjust its operation based on said ballast configuration;

a second one of said at least two ports is adapted to receive a ballast control signal from a remote transmitter or a sensor to control operation of said electronic ballast, said microprocessor receiving said ballast control signal; and

said microprocessor is operable to send a command over said digital communication link to said at least one other electronic ballast to control the operation of said at least one other electronic ballast in response to receiving said ballast control signal.

38. (Withdrawn) An electronic ballast for driving at least one gas discharge lamp, comprising:

an inverter circuit producing a high frequency drive voltage for driving a lamp current in said at least one gas discharge lamp;

a microprocessor connected to said inverter; said microprocessor directly controlling said inverter to control said lamp current to a desired level; and

at least two ports connected to said microprocessor, each of said ports being capable of at least one of sending and receiving messages, respectively, to and from at least one of a central controller, a local controller, and a lighting load.

39. (Withdrawn) The electronic ballast of claim 38, wherein at least one of said at least two ports is capable of both sending and receiving messages.

40. (Withdrawn) The electronic ballast of claim 38, further comprising:

a memory connected to said microprocessor; and

a set of data stored in said memory for facilitating operation of said ballast.

41. (Withdrawn) The electronic ballast of claim 40, further comprising:

a program stored in said microprocessor for determining said desired level;

said program using a portion of said set of data to determine how a message received via said at least two ports is used to determine said desired level.

42. (Withdrawn) The electronic ballast of claim 40, further comprising:

a program stored in said microprocessor for generating a command for a lighting load; the command being sent via one of said at least two ports, wherein said program utilizes said set of data to determine a content of said command in accordance with a message received via said at least two ports.

43. (Withdrawn) The electronic ballast of claim 40, wherein at least a portion of said set of data is modifiable in accordance with a message received via at least one of said at least two ports.

44. (Withdrawn) The electronic ballast of claim 40, wherein at least a portion of said set of data is changed by the microprocessor in response to receiving a predetermined message via at least one of said at least two ports.

45. (Withdrawn) An electronic ballast for driving at least one gas discharge lamp, comprising:

an inverter circuit producing a high frequency drive voltage for driving a lamp current in said at least one gas discharge lamp;

a microprocessor connected to said inverter; said microprocessor directly controlling said inverter to control said lamp current to a desired level;

at least one port connected to said microprocessor for receiving a message and providing said message to said microprocessor; a memory connected to said microprocessor; and

a set of data stored in said memory, said microprocessor being adapted to change a portion of said set of data in response to receiving a predetermined message via said at least one port.

46. (Withdrawn) The electronic ballast of claim 45, wherein said at least one port comprises a port for receiving signals from an IR receiver.

47. (Withdrawn) The electronic ballast of claim 45, wherein said at least one port comprises a digital communications port.

48. (Withdrawn) The electronic ballast of claim 47, wherein said at least one port comprises a port for receiving signals from an RF receiver.

49. (Withdrawn) An electronic ballast for driving at least one gas discharge lamp, comprising:

a control circuit;

a first port connected to said control circuit, said first port being adapted to receive messages;

and

a second port connected to said control circuit, said second port being adapted to send messages, said control circuit being adapted to respond to a first message received via said first port by sending a second message via said second port.

50. (Withdrawn) The electronic ballast of claim 49, wherein said control circuit comprises a microprocessor.

51. (Withdrawn) The electronic ballast of claim 49, wherein said first message and said second message are substantially the same.

52. (Withdrawn) The electronic ballast of claim 49, wherein said second message is a command for a lighting load.

53. (Withdrawn) A lighting system comprising:

a ballast; said ballast comprising a control circuit and a first and a second port connected to said control circuit;

a first light controlling device connected to said first port; and

a second light controlling device connected to said second port;

wherein said first device can communicate with said second device via said control circuit.

54. (Withdrawn) The lighting system of claim 53, wherein:

said first light controlling device is a device selected from the group consisting of a local control, a central controller and a lighting load; and

said second light controlling device is a device selected from the group consisting of a local control, a central controller and a lighting load.

55. (Withdrawn) The lighting system of claim 53, wherein a plurality of light controlling devices is connected to said first port.

56. (Withdrawn) The lighting system of claim 55, wherein a plurality of light controlling devices is connected to said second port.

57. (Withdrawn) The lighting system of claim 53, wherein said control circuit comprises a microprocessor.

58. (Withdrawn) The lighting system of claim 53, wherein said first port is capable of receiving signals from an IR receiver.

59. (Withdrawn) An electronic ballast for driving at least one gas discharge lamp, comprising:

an inverter circuit producing a high frequency drive voltage for driving a lamp current in said at least one gas discharge lamp;

a microprocessor connected to said inverter; said microprocessor directly controlling said inverter to control said lamp current to a desired level;

at least one port connected to said microprocessor; said port being adapted to send a message comprising at least one of a command and ballast configuration; and

a program stored in said microprocessor, said program adapted to determine a status of said electronic ballast and send a message indicative of said status via said at least one port.

60. (Withdrawn) An electronic ballast for driving at least one gas discharge lamp, comprising:

an inverter circuit producing a high frequency drive voltage for driving a lamp current in said at least one gas discharge lamp;

a microprocessor connected to said inverter; said microprocessor directly controlling said inverter to control said lamp current to a desired level;

at least one port connected to said microprocessor; said port being adapted to send a message to at least one of a central controller, a local controller, and a lighting load; and

a program stored in said microprocessor, said program adapted to determine a status of said electronic ballast and send a message indicative of said status via said at least one port.

61. (Withdrawn) The electronic ballast of claim 60, wherein said status includes at least one of the group consisting of on/off condition, running hours, running hours since last lamp change, dim level, operating temperature, and failure conditions.

62. (Withdrawn) An electronic ballast for driving at least one gas discharge lamp, comprising:

an inverter circuit producing a high frequency drive voltage for driving a lamp current in said at least one gas discharge lamp;

a control circuit connected to said inverter; said control circuit directly controlling said inverter to control said lamp current to a desired level; and

at least three ports connected to said control circuit, each of said ports being capable of at least one of sending and receiving messages.

63. (Withdrawn) The electronic ballast of claim 62, wherein said at least three ports comprise:

an analog port;

a first digital port; and

a second digital port, wherein said first digital port is capable of both sending and receiving messages.

64. (Withdrawn) The electronic ballast of claim 63, wherein said control circuit is a microprocessor.

65. (Withdrawn) A method for controlling a gas discharge lamp with a ballast having a processor therein, said method comprising:

receiving a plurality of control signals by said processor;

sampling said received plurality of control signals in accordance with an assigned priority of each control signal; and

controlling said gas discharge lamp in accordance with said sampled control signals.

66. (Withdrawn) A method in accordance with claim 65, further comprising determining a ballast output signal for controlling said gas discharge lamp in accordance with said sampled control signals.

67. (Withdrawn) A method in accordance with claim 66, further comprising controlling a switch of an inverter of said ballast for determining said ballast output signal.

68. (Withdrawn) A method in accordance with claim 67, wherein:

within a predetermined time period, each control signal assigned a high priority above a predetermined threshold priority value is sampled more often than each control signal assigned a low priority less than said predetermined threshold priority value.

69. (Withdrawn) A method in accordance with claim 68, wherein:

within a series of said predetermined time periods, each control signal assigned a high priority is sampled during each time period in said series; and

control signals assigned a low priority are sampled during alternate time periods within said series.

70. (Previously Presented) The electronic ballast of claim 25, wherein said inverter comprises a controllably conductive device, said microprocessor operable to control said controllably conductive device between conductive and non-conductive states to produce said drive voltage.

71. (Previously Presented) The electronic ballast of claim 70, wherein said microprocessor controls said controllably conductive device to said non-conductive state when a current through said controllably conductive device reaches a threshold level.

72. (Currently Amended) The electronic ballast of claim 71, wherein said inverter further comprises a transformer characterized by a magnetizing inductance, said microprocessor operable to use a computational ~~module~~ model of said magnetizing inductance to determine when said current through said controllably conductive device reaches said threshold level.

73. (Previously Presented) The electronic ballast of claim 72, further comprising:

a rectifier for receiving an AC line voltage and producing a rectified voltage;

wherein said microprocessor receives a control signal representative of an instantaneous magnitude of said rectified voltage.

74. (Currently Amended) The electronic ballast of claim 73, wherein said microprocessor uses said control signal to compute the time at which said current through said controllably conductive device reaches said threshold level as part of said computational ~~module~~ model.

75. (Previously Presented) The electronic ballast of claim 73, wherein said microprocessor computes said duty cycle of said output signal using said instantaneous magnitude of said rectified voltage.

76. (Withdrawn) The electronic ballast of claim 25, wherein said microprocessor is operable to receive a plurality of ballast sense signals.

77. (Withdrawn) The electronic ballast of claim 76, wherein said microprocessor is operable to determine if said gas discharge lamp has started in response to a ballast sense signal representative of the magnitude of said current through said gas discharge lamp.

78. (Withdrawn) The electronic ballast of claim 76, wherein said microprocessor is operable to determine, in response to said ballast sense signals, if said lamp is operating properly or if a fault condition exists.

79. (Withdrawn) The electronic ballast of claim 25, wherein said microprocessor controls pre-heating and striking said lamp.

80. (Withdrawn) The electronic ballast of claim 79, wherein pre-heating said lamp comprises heating filaments of said lamp, and striking said lamp comprises increasing a magnitude of said drive voltage over a programmed interval to strike an arc in said lamp.

81. (Withdrawn) The electronic ballast of claim 25, wherein said microprocessor is operable to transmit messages to a second ballast via said port.

82. (Withdrawn) The electronic ballast of claim 81, wherein said command comprises a command for said second ballast to control the operation of a second gas discharge lamp connected to said second ballast.

83. (Previously Presented) The electronic ballast of claim 25, wherein said ballast configuration comprises a light output level of said ballast.

84. (Previously Presented) The electronic ballast of claim 25, wherein said port is adapted to be coupled to a digital communication link.

85. (Previously Presented) The electronic ballast of claim 84, wherein said digital communication link comprises a DALI protocol link.

86. (Currently Amended) The electronic ballast of claim 25, wherein said port comprises [[a]] an infrared transmitter.

87. (Previously Presented) The electronic ballast of claim 25, wherein said port comprises a radio frequency transmitter.

88. (Previously Presented) The electronic ballast of claim 25, wherein said microprocessor modulates the pulse width of said control signal to control said inverter.

89. (Previously Presented) The electronic ballast of claim 37, wherein a first one of said ports is adapted to be coupled to a digital communication link.

90. (Currently Amended) The electronic ballast of claim 89, wherein a second one of said ports comprises [[a]] an infrared receiver for receiving infrared signals.

91. (Previously Presented) The electronic ballast of claim 90, wherein said digital communication link comprises a DALI protocol link.

92. (Previously Presented) The electronic ballast of claim 90, wherein said digital communication link comprises a radio frequency communication link.

93. (New) The electronic ballast of claim 37, wherein the ballast input signal comprises an infrared electrical signal from an infrared transmitter.

94. (New) The electronic ballast of claim 93, wherein the infrared electrical signal comprises a command to turn said gas discharge lamp on or off.

95. (New) The electronic ballast of claim 37, wherein the ballast input signal comprises a radio frequency signal from a radio frequency transmitter.

96. (New) The electronic ballast of claim 37, wherein the ballast input signal comprises a sense signal from a photosensor.

97. (New) The electronic ballast of claim 37, wherein the ballast input signal comprises a signal from an occupancy sensor.